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TAXONOMY OF THE *VERBENA CALIFORNICA* GROUP (VERBENACEAE)

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ABSTRACT

Verbena californica (California) and *V. orcuttiana* (Baja California) are hypothesized to be sister species and constitute *Verbena* series *Californicae*. Descriptions and typifications are provided for both and a map shows their relative distributions.
KEY WORDS: *Verbena californica*, *V. orcuttiana*, *Verbena* series *Californicae*, Verbenaceae

Verbena californica Moldenke and *V. orcuttiana* Perry are narrow endemics (Fig. 1) that are hypothesized here to be sister species. Both are taptooted perennials, with elongate, epetiolate, and regularly coarsely crenate to serrate but unlobed leaves; fruiting spikes are few from medial to distal branches and the fruits become remote; rachises and calyces are glandular; and commissural faces of the nutlets extend completely to the nutlet tips.

Verbena californica and *V. orcuttiana*, with *V. abramsii* Moldenke, were recognized as series *Californicae* (Nesom 2010a), but *V. abramsii* proves to be most closely related to *V. lasiostachys* Link (Nesom 2010b). The Californian sisters are similar in aspect to some species of ser. *Tricesimae* — their recognition as a separate group emphasizes their distinctive nutlet morphology and their similar geography.

KEY TO THE SPECIES

1. Distal cauline leaves often subclasping; stems densely bristly-hirsute to hirsute-villous, stipitate-glandular; California ..... **Verbena californica**
1. Cauline leaves not subclasping; stems glabrous or glabrate to sparsely hirsutulous or hirsutulous-hirtellous, eglandular to sparsely glandular; Baja California ..... **Verbena orcuttiana**

VERBENA CALIFORNICA Moldenke, Known Geogr. Distr. Verbenaceae and Avicenniaceae, 79. 1942. **TYPE: USA. California**. Tuolumne Co.: 3 mi N of Keystone, 30 Sep 1938, *R.F. Hoover 3870* (holotype: JEPS 3403-digital image!, NY-photo!; isotypes: NY! ("fragment of type, herb. U. of Calif.")-digital image!, UC 213708, digital image!, US-digital image!). Annotations of the JEPS and UC specimens by G. Thomas Robbins note that "The original description states that the type of the species 'is deposited in the herbarium of the University of California at Berkeley.'" The JEPS sheet was annotated in February 1942 by Moldenke as "TYPE!;" the UC specimen was not annotated by Moldenke. The US specimen was annotated in 1982 by Moldenke as an "isotype."

Plants perennial herbs, taprooted. **Stems** 1–3 from the base, decumbent-ascending to erect, 30–75 cm, densely bristly-hirsute to hirsute-villous, stipitate-glandular. **Leaves**: basal and lower cauline persistent, (proximal and medial) mostly oblanceolate but also to elliptic-oblanceolate or oblong-oblanceolate, proximal and midstem blades 3–8(–9) cm x 6–25 mm, relatively even-sized or quickly becoming narrower (narrowly oblong-oblanceolate to oblong-oblanceolate) distally and subentire, veins slightly impressed adaxially, margins coarsely serrate to serrate-crenate or subentire, both surfaces hirsute to hirsute-strigose or hirsute-villous, sparsely stipitate-glandular; sessile to subsessile, distal usually subclasping. **Fruiting spikes** 1 or 3(–5) from distal branches, open and relatively slender (fruits not overlapping or only slightly), 6–20(–25) cm; floral bracts ovate-

triangular to triangular-lanceolate, 3.5–4 mm, equal or slightly shorter than the calyces. **Calyces** 3.5–4 mm, hispid-hirsute, lobes triangular, not connivent. **Corollas** violet to pale purple or white with pink tubes, tubes 4.5–5 mm, 1–1.5(–2) mm longer than the calyces, limbs 3–4.5 mm in diam. **Nutlets** 1.8–2.1 mm, easily separating, commissural faces reaching the nutlet tips, bare or sparsely bullate with filiform plates.

Flowering May–Sep. Wet places, seeps, creek edges, stream beds, oak and pine-oak woodlands, serpentine soils; 300–400 m elevation.

Verbena californica is a California endemic known only from the serpentine soils of the Red Hills in western Tuolumne County. The plants are characterized by large, subclasping cauline leaves, bristly-hirsute and stipitate-glandular stems, glandular calyces, and relatively large flowers.

Collections examined. **USA. California**. Tuolumne Co.: 1.5 mi SW of Chinese Camp, 19 Jun 1938, *Hoover 3613* (NY); W base of Taylor Hill, S of Chinese Camp, in wet soil along stream, serpentine rock, 23 Jun 1966, *Hoover 9885* (NY); moist rock, serpentine soil in a stream bed crossing Redhills Rd (Sims Rd cont.) 1.7 mi S of Hwy 120 between Yosemite Jct and Chinese Camp, 23 May 1972, *McNeal 925* (NY); 2 mi S of Chinese Camp on Six Bit Creek, streambed in dry drassland and chaparral, 10 Jun 1970, *A.R. Moldenke 3397* (LL-2 sheets); Chinese Camp, along small brook, 19 Jun 1972, *A.R & H.N. Moldenke 25758* (LL, MO). Data from numerous collections, with photos of nine of the specimens, are provided in the Calflora Database (2010); a Calflora georeferenced map includes 26 points. All populations apparently occur within an area of 15–20 square miles.

VERBENA ORCUTTIANA Perry, Ann. Missouri Bot. Gard. 20: 284. 1933. **TYPE: Mexico. Baja California**. Hanson's Ranch, table lands, 6000 ft, 30 Jul 1883, *C.R. Orcutt 909* (holotype: GH digital image!; isotypes: F-2 sheets digital image!, NY! digital image!).

Plants perennial herbs, taprooted. **Stems** ca. 3–5 from the base, decumbent-ascending to erect, 40–70 cm, glabrate to very sparsely hirsutulous, eglandular. **Leaves**: basal and lower cauline persistent, (basal and medial) oblong-oblanceolate to lanceolate, oblanceolate, or narrowly oblanceolate, not lobed, gradually tapering to a petiolar region, veins impressed adaxially, margins coarsely to shallowly serrate with 5–8(–9) teeth per side, narrowly revolute, midstem blades mostly 4–6 cm x 4–8 mm, relatively even-sized to near midstem, becoming sublinear and subentire distally, not subclasping, hirsute-strigose and sparsely stipitate-glandular abaxially, hirsute-strigose adaxially. **Fruiting spikes** 1 or 2–5 from medial to distal branches, moderately dense with overlapping fruits but loosening in the proximal half and fruits becoming slightly remote, 6–30 cm; floral bracts lanceolate-acuminate, 2.5–3 mm, equal or slightly shorter than the calyces. **Calyces** 3.5–4 mm, short-strigose to hirsutulous-strigose, sessile- to short-stipitate-glandular, lobes deltate-triangular to ovate-lanceolate, not connivent to subconnivent. **Corollas** blue to violet, tubes 4–4.5 mm, 1–1.5 mm longer than the calyces, limbs 3–4 mm in diam. **Nutlets** ca. 2 mm, easily separating, commissural faces extending completely to the nutlet tips, densely white-bullate-papillate.

Flowering Jul–Sep. Open pine woods, dry meadows; ca. 1500–2000 m.

Additional collections. **Mexico. Baja California**. Sierra Juarez, 12 Jul 1924, *Gallegos 2342* (US fide Perry); Sierra Juarez, locally common in dry meadow, 3.5 road mi W of Rancho la Botella [31° 57' N, 115° 53' W], 1700 m, 25 Sep 1966, *Moran 13604* (LL, MO, NY); Sierra Juarez, common under pine, La Sierrita NW of Laguna Hanson [32° 05' N, 115° 55.5' W], 1700 m, 1 Aug 1976, *Moran 23709* (LL); Sierra Juarez, common with *Artemisia tridentata* in open Jeffrey pine forest, 5 km N of Laguna Hanson [32° 05' N, 115° 54' W], 1650 m, 24 Jul 1977, *Moran 24339* (LL); Pinery, 27 Jul 1883, *Orcutt s.n.* (US fide Perry); Hanson's Ranch, 29 Jul 1883, *Orcutt s.n.* (GH, NY, US fide Perry); Cantilas Mts., Lower Calif., Jul 1883, *Orcutt s.n.* (NY); mountains, northern Lower California, 8 Jul 1885, *Orcutt s.n.* (US fide Perry).

Verbena orcuttiana apparently is endemic to the Sierra Juarez of Baja California, where it is known from about 31° 57'–32° 10' N and 115° 49'–53' W. Most collections are from the area of Laguna Hanson, now in El Parque Nacional de Constitución de 1857.

Proposed treatment of *Verbena orcuttiana* as a variety of the eastern North American *V. simplex* Lehm. (O'Leary et al. 2010, in press) refers to Perry's observation (1933, p. 285) that "In gross habit, [*V. orcuttiana*] is scarcely to be distinguished from *V. simplex*, but the latter has somewhat harsher pubescence and larger non-glandular flowers." O'Leary et al concur but consider that "estos characteres no son lo suficientemente importante como para sostener una species."

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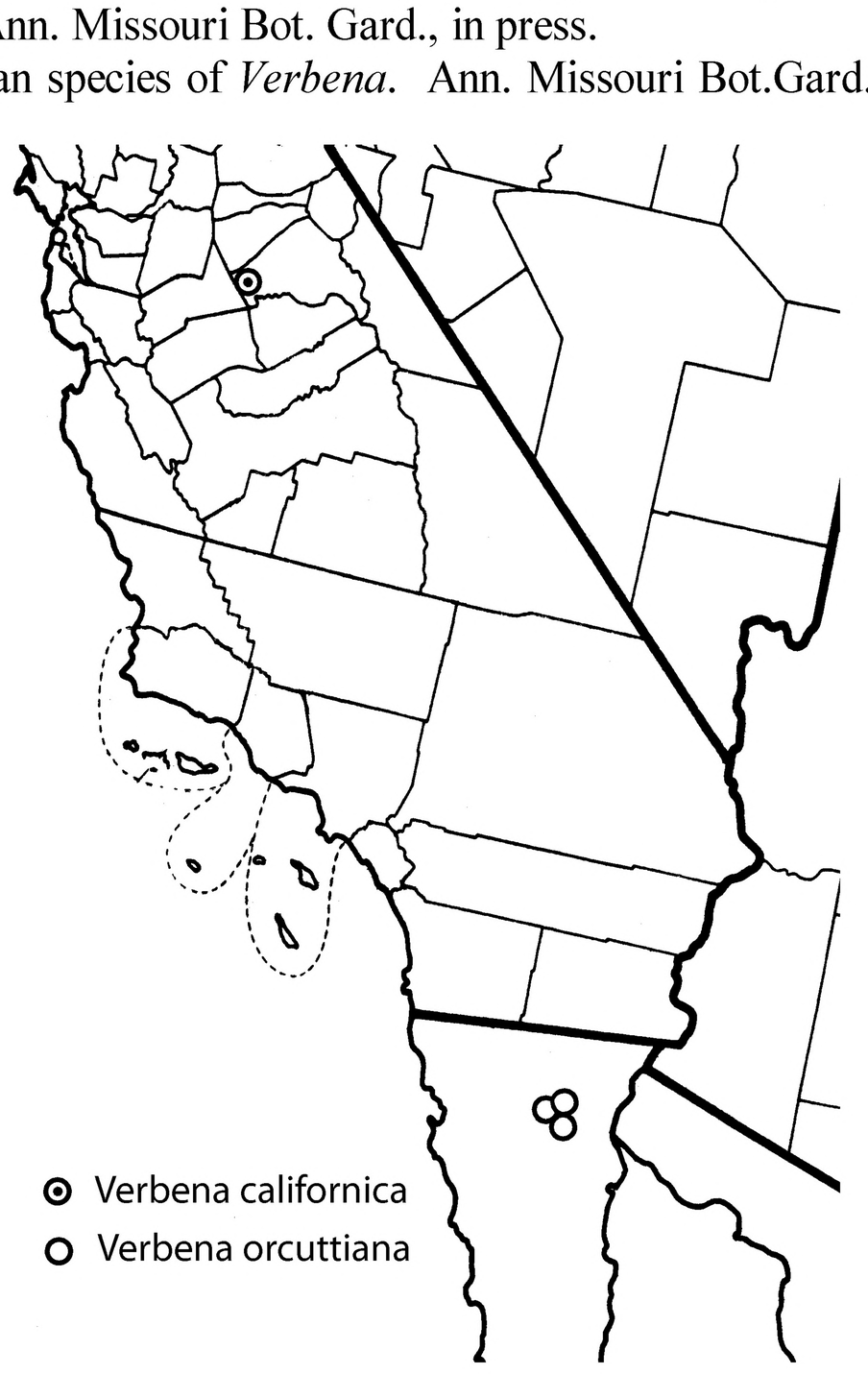

Fig. 1. Distribution of *Verbena californica* and *V. orcuttiana*. Their distributions are separated by about 850 kilometers.